

ILMENITE¹

(Data in thousand metric tons of contained TiO₂, unless otherwise noted)

Domestic Production and Use: Two firms produced ilmenite concentrate from heavy-mineral sands operations in Florida and Virginia, and one firm produced ilmenite in California as a byproduct of sand and gravel production. Domestic ilmenite production data was withheld to avoid revealing company proprietary data. Based on average prices, the value of U.S. ilmenite and titanium slag consumption in 1998 was about \$334 million. Major coproducts of mining from heavy-mineral deposits are rutile and zircon. About 99% of the ilmenite and slag was consumed by five titanium pigment producers. The remainder was used in welding rod coatings and for manufacturing alloys, carbides, and chemicals.

Salient Statistics—United States:	1994	1995	1996	1997	1998^e
Production	W	W	W	W	W
Imports for consumption ²	584	586	641	651	605
Exports ^e	9	15	7	11	39
Consumption, reported ²	W	1,010	1,010	1,060	1,120
Price, dollars per metric ton:					
Ilmenite, bulk, 54% TiO ₂ , f.o.b. Australian ports	77	83	87	83	77
Slag: ^e					
80% TiO ₂ , f.o.b. Sorel, Quebec	278	244	292	294	338
85% TiO ₂ , f.o.b. Richards Bay, South Africa	334	349	353	390	385
Stocks, mine, distributor and consumer, yearend ²	208	137	267	234	248
Employment, mine and mill, ³ number	400	400	400	400	450
Net import reliance ⁴ as a percent of reported consumption	W	64%	50%	63%	49%

Recycling: None.

Import Sources (1994-97): South Africa, 54%; Australia, 31%; Canada, 5%; and other, 10%.

Tariff:	Item	Number	Normal Trade Relations (NTR) 12/31/98	Non-NTR⁵ 12/31/98
	Ilmenite and ilmenite sand	2614.00.6020	Free	Free.
	Titanium slag	2620.90.5000	Free	Free.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: None.

Events, Trends, and Issues: Global production of total ilmenite and slag in 1998 is estimated to have increased 9% compared with that of 1997. Domestic consumption of ilmenite and titanium slag concentrates in 1998 was estimated to have increased 7% compared with that of 1997. Although the United States relies heavily on imports of ilmenite and titanium slag to satisfy most of its domestic needs for titanium mineral feedstock, 1998 imports of these concentrates decreased significantly.

In 1998, several projects to expand the availability of chloride-grade slag feedstock were underway. In Norway, the Tinfos slag operation was in the process of converting its ilmenite feedstock source material so as to allow for the production of chloride-grade slag. Shipments of chloride-grade slag from the upgraded slag plant at Sorel, Canada began in the first quarter 1998. In South Africa, an expansion project was underway at Namakwa to double capacity through the addition of a second slag furnace.

ILMENITE

In Australia, two of the world largest mineral sands producers planned to merge their two companies. If completed, the merger would improve recovery rates and extend the mine life of some reserves by processing of minerals at more efficient plants. Operational difficulties at the newly commissioned operation at Beenup has resulted in limited production of ilmenite feedstock. In the first half of 1998, the Beenup operation produced less than 30% of its 600,000-ton-per-year nameplate capacity. Initially, ilmenite from Beenup was scheduled to supply one-half of the feedstock requirements for the Tinfos slag operation in Norway. The shortfall has been reported to have been met with material from India.

Exploration and development of titanium mineral deposits continued in 1998. In the United States, deposits under examination included Camden, TN, Escalante, UT, Powderhorn, CO, and Okefenokee, GA. Canadian deposits under investigation included Shubenacadie River Basin, Nova Scotia, and Pipestone Lake, Manitoba. In Australia, investigations were ongoing at Broken Hill, Spring Hill, and Twelve Mile, New South Wales; Goondicum, Western Queensland; Ouyen, Victoria; and a large portion of the Murray Basin in New South Wales, Victoria, and South Australia. South African exploration and development investigations were ongoing at Bothaville. In preparation of a full feasibility study, a metallurgical study was completed for the Kwale mineral sands project in Kenya.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁶	Reserve base ⁶
	1997	1998 ^e		
United States	W	W	13,000	59,000
Australia	1,270	1,400	⁷ 81,000	⁷ 118,000
Brazil	54	54	18,000	18,000
Canada (slag)	680	768	31,000	36,000
China	85	85	30,000	41,000
Egypt	—	—	—	1,700
Finland	—	—	1,400	1,400
India	162	178	30,000	38,000
Italy	—	—	—	2,200
Madagascar	—	—	—	19,000
Malaysia	92	92	—	1,000
Norway (ilmenite and slag)	338	338	40,000	40,000
South Africa (slag)	842	935	63,000	63,000
Sri Lanka	10	16	13,000	13,000
Ukraine	133	53	5,900	13,000
Other countries	<u>5</u>	<u>5</u>	<u>1,000</u>	<u>1,000</u>
World total (rounded)	⁸ 3,660	⁸ 4,000	327,000	460,000

World Resources: Ilmenite supplies about 90% of the world's demand for titanium minerals. World ilmenite resources total about 1 billion tons of titanium dioxide. Major resources occur in Australia, Canada, China, India, New Zealand, Norway, South Africa, Ukraine, and the United States.

Substitutes: Rutile and synthetic rutile were used extensively to produce titanium dioxide pigment.

^eEstimated. W Withheld to avoid disclosing company proprietary data.

¹See also Rutile and Titanium and Titanium Dioxide.

²Includes titanium slag from Canada, Norway, and South Africa and leucoxene from Australia.

³Includes operating employees shown under Rutile, subject to the same footnoted comments.

⁴Defined as imports - exports + adjustments for Government and industry stock changes.

⁵See Appendix B.

⁶See Appendix D for definitions.

⁷Increased from 1997 based on data published by the Australian Bureau of Resource Sciences.

⁸Excludes U.S. production.